

Relating Interactions to Artifacts Through Content Analysis: A Practical Investigation

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Abstract. Nowadays, information workers often work within networked structures, where relations between individuals become active according to the needs and workers multitask between several collaborations. One of the difficulties pointed out in these studies lies in keeping track of the many collaborations and ties to others, managing the relationships involved and the different roles and activities in each situation. Two important activities in this context are *remembering* (who one is or could be collaborating with, in what capacity, pending tasks, etc.) and *communicating* (as a means to strengthen relationships, negotiate joint work or keep others informed.) In this paper, we explore the possibility of linking relationships to activities through interaction analysis. More specifically, we explore content analysis as a means to determine collaboration themes and identify artifacts or resources that pertain to a certain social world.

Keywords: Interaction analysis, content analysis, information retrieval.

1 Introduction

Modern information workers often work within networked configurations, where relations between people become active according to the needs [18]. These workers often multitask between several collaborations, dividing their time and attention according to the urgency of the tasks at hand [12]. Organizations have been transformed by network technology into networks of interconnected individuals [4]. This is advantageous because the networked structure leads to higher adaptability and flexibility and is well suited to handle dynamic environments [2]. Computer networks have flourished and, as a result, the adoption of virtual teams (teams where individuals are remotely located and most of the time work using computer tools) by organizations has also increased [14]. These two factors lead to a configuration in which distributed individuals manage and work within their networks, forming groups to accomplish objectives.

Oftentimes, these teams are also capable of self organization [3], as members have the flexibility to reconfigure and reassign tasks according to immediate needs. Thus, work within groups and organizations happens as much as a function of individual

actions and interrelations as of group rules and organizational mandates [2]. In some situations, individuals draw upon social networks and existing relationships to accomplish part of their tasks. Add to the distance and the need for flexibility the fact that individuals often alternate between individual and joint work [14] and the problem of maintaining individuals in synch becomes more complex. To be able to adapt to new situations, workers need to have information regarding their collaborators, tasks, ongoing activities and arrangements. The group needs this information to be able to assess the situation and change configurations when necessary. Early research on awareness systems has tried to address this problem by providing information about other group members to heighten understanding of shared workspace, but has thus far not addressed the automatic constitution of these workspaces and information delivery within them.

Some of the aforementioned studies indicate that the two main problems lie in *remembering* people and activities and *communicating* with others [18]. A recurring problem is managing attention and remembering which arrangements have been made and what tasks are due in order “not to let anything fall through the cracks” [12]. Support systems for workers engaged in multiple virtual teams must help individuals manage their multiple collaborative contexts. One way to do this is by helping them understand the social context of the work they are performing: who is involved with this project and in what capacity? What other resources are relevant? Automatic determination of collaborators and identification of collaboration themes is a step towards that goal. This social context is composed not only of a set of people, resources and tools but also of the interrelations between them, which affects ongoing work by defining how people relate, organize themselves and get work done. The group’s context, informally constructed and dynamic, contains hierarchies, roles and task assignments. Discovery of these contexts is a first step towards the creation of systems to support workers enmeshed in them.

Prior work indicates that it is possible to discover collaborators through analysis of interaction patterns and social networks [7][21]. Following this reasoning, it should be possible to automatically constitute part of a worker’s social contexts through interaction and content analysis. This paper looks into the applicability of content analysis to tie interactions to artifacts an individual might be working on, which could be used to define these social contexts, locating the user within a particular shared context even while working individually. Social contexts could be used by support systems to help users maintain ties to others, distribute information or locate potential collaborators and to provide added context to artifacts.

This paper is organized as follows: in the following section we present theoretical work that underlies our investigation. Then, related systems are presented in Section 3. Section 4 presents an approach to tie interactions to resources through content analysis, followed by an evaluation of this approach in Section 5. Discussion and future work are presented in Section 6.

2 Theoretical Research

This section is divided into two subsections: first, we provide a theoretical background that leads to our current investigation. We then briefly explain the information retrieval techniques involved in our study.